

**BACK SUPPORTING DEVICE FOR A MOTOR VEHICLE SEAT****BACKGROUND OF THE INVENTION****1. Field of the Invention**

This invention relates to a back supporting device for a motor vehicle seat, and more particularly to a back supporting device for a motor vehicle seat that includes a backrest which is movable on the seat.

**2. Description of the Related Art**

Referring to Fig. 1, a conventional motorcycle seat 1 is shown to include a driver seat portion 11, a passenger seat portion 12, a luggage frame 13, and a backrest 2 fixed on the luggage frame 13 and disposed immediately behind the passenger seat portion 12. As such, the backrest 2 cannot be used to support a driver's back.

**15 SUMMARY OF THE INVENTION**

The object of this invention is to provide a back supporting device for a motor vehicle seat that includes a backrest which is movable on the seat for supporting the back of a driver or a passenger.

According to this invention, a back supporting device for a motor vehicle seat includes a pair of hollow left and right sliding rails that are disposed fixedly on two opposite sides of a passenger seat portion disposed immediately behind a driver seat portion. Two slidable elements are received respectively and movably within the left and right sliding rails. Two connecting members are connected respectively and fixedly to the slidable elements,

and are disposed outwardly of the left and right sliding rails. Two supporting frames have lower ends connected respectively and pivotally to the connecting members. A backrest is retained on the supporting frames so as to permit the slidable elements to be moved forcibly within the left and right sliding rails, thereby permitting movement of the backrest between front and rear ends of the passenger seat portion. Preferably, the slidable elements are locked respectively and releasably within the left and right sliding rails.

#### BRIEF DESCRIPTION OF THE DRAWINGS

These and other features and advantages of this invention will become apparent in the following detailed description of a preferred embodiment of this invention, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a conventional motorcycle seat that is provided with a fixed backrest;

Fig. 2 is a top view of an assembly of the preferred embodiment of a back supporting device according to this invention and a motor vehicle seat;

Fig. 3 is a schematic sectional view of the assembly of the preferred embodiment and the motor vehicle seat;

Fig. 4 is a side view of the assembly of the preferred embodiment and the motor vehicle seat, illustrating how the position of a backrest of the preferred embodiment is adjusted;

Fig. 5 is a fragmentary top view of the assembly of the

preferred embodiment and the motor vehicle seat, illustrating how an insert portion of a positioning member of the preferred embodiment is brought into engagement with a selected one of a plurality of positioning holes in a top surface of a sliding rail of the preferred embodiment; and

Fig. 6 is a perspective view of a positioning member of the preferred embodiment.

#### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to Figs. 2, 3, and 4, the preferred embodiment of a back supporting device 5 according to this invention is shown to include a pair of hollow left and right sliding rails 51, 52, two slide units 53, two supporting frames 54, a back supporting mechanism 55, and two locking units 56 in the form of lock bolts.

The back supporting device 5 is mounted on a motor vehicle seat 3 that is configured as a motorcycle seat and that has a driver seat portion 31 disposed at a front portion of the motor vehicle seat 3, and a passenger seat portion 32 disposed immediately behind the driver seat portion 31. The passenger seat portion 32 has a width that is reduced gradually from a front end thereof to a rear end thereof.

The left and right sliding rails 51, 52 are disposed respectively and fixedly on two opposite sides of the passenger seat portion 32, extend from the front end of the passenger seat portion 32 to the rear end of the passenger seat portion 32, and are spaced apart from each

other by a distance along a transverse direction (t) (see Fig. 2) of the motor vehicle seat 3. The distance is reduced gradually from the front end of the passenger seat portion 32 to the rear end of the passenger seat portion 32, as shown in Fig. 2. Each of the left and right sliding rails 51, 52 has a top surface that is formed with a longitudinal row of positioning holes 511, 521, is shaped as a rectangular tube, and has an outer sidewall that is formed with a longitudinal slot 512, 522 therethrough.

Each of the slide units 53 includes a slidable element 531 received movably within a corresponding one of the left and right sliding rails 51, 52, a connecting member 532 disposed outwardly of the corresponding one of the left and right sliding rails 51, 52 and connected fixedly to the slidable element 531 by the corresponding lock bolt 56, and a positioning unit for retaining the slidable element 531 at a selected one of a plurality of positions relative to the corresponding one of the left and right sliding rails 51, 52. The slidable elements 531 are also shaped as rectangular tubes received respectively and fittingly within the left and right sliding rails 51, 52. Each of the slidable elements 531 of the slide units 53 has an outer sidewall that is formed with a threaded hole 531' therethrough. The lock bolts 56 extend respectively through the longitudinal slots 512, 522 in the left and right sliding rails 51, 52, and engage respectively the threaded holes 531' in the slidable elements 531 so as to

lock the slidable elements 531 respectively and releasably within the left and right sliding rails 51, 52.

Each of the positioning units of the slide units 53 includes a positioning member 533 connected pivotally to the connecting member 532 of the corresponding slide unit 53, and a biasing unit that is configured as a coiled tension spring 535. Each of the positioning members 533 is shaped as a curved rod, and includes a zigzag rod portion 534 (see Fig. 6) connected pivotally to the connecting member 532 of the corresponding slide unit 53, and an insert portion 536 (see Figs. 5 and 6) that is shaped as an L-shaped rod and that is connected fixedly to a front end of the zigzag rod portion 534. Each of the coiled tension springs 535 has a front end fastened to a rear end of the corresponding zigzag rod portion 534, and a rear end disposed above the front end of the corresponding coiled tension spring 535 and fastened to the connecting member 532 of the corresponding slide unit 53, as shown in Fig. 4. As such, the insert portions 536 of the positioning members 533 are biased by the coiled tension springs 535 to turn downwardly so as to engage respectively two selected ones of the positioning holes 511, 521 in the top surfaces of the left and right sliding rails 51, 52.

Each of the supporting frames 54 has a curved rod body 541, an inverted T-shaped lower end 542 that is formed integrally with the curved rod body 541 and that is connected pivotally to the connecting member 532 of the

corresponding slide unit 53 such that upper ends of the supporting frames 54 can rotate toward and away from each other, and an upper end 541' that is C-shaped and that defines a curved groove 543. The curved grooves 543 are 5 located between the upper ends 541' of the supporting frames 54.

The back supporting mechanism 55 includes a backrest 551 mounted to the supporting frames 54 and disposed above the passenger seat portion 32, and a frame-positioning device 552 disposed between the backrest 551 and the supporting frames 54 to position the backrest 551 on the supporting frames 54. As such, when the lock bolts 56 are loosened, the slidable elements 531 are movable respectively and forcibly within the left and right sliding 10 rails 51, 52.

The frame-positioning device 552 includes an inverted U-shaped wall 553, a horizontal rod 557, a coiled compression spring 558, and two pressing elements 559. The inverted U-shaped wall 553 is mounted fixedly on the backrest 551, and has two parallel rod-supporting wall portions (553a). The horizontal rod 557 extends through holes 555 in the rod-supporting wall portions (553a) of the inverted U-shaped wall 553. Two retaining rings 57 are sleeved respectively and fixedly around two ends of the horizontal rod 557, and abut against the rod-supporting 20 wall portions (553a) of the inverted U-shaped wall 553 so as to fix the horizontal rod 557 relative to the inverted 25

U-shaped wall 553. The upper ends 541' of the supporting frames 54 are sleeved movably and rotatably on the horizontal rod 557 between the rod-supporting wall portions (553a) of the inverted U-shaped wall 553. The coiled compression spring 558 is sleeved around the horizontal rod 557 between the upper ends 541' of the supporting frames 54. Each of the pressing elements 559 is sleeved movably and rotatably around the horizontal rod 557 between the upper end 541' of the corresponding supporting frame 54 and the coiled compression spring 558, and has a semi-spherical outer portion 5591 that engages fittingly the curved groove 543 in the upper end 541' of the corresponding supporting frame 54, and a circular tubular inner portion 5592 that is formed integrally with the semi-spherical outer portion 5591. The coiled compression spring 558 has two ends that are sleeved respectively around the circular tubular inner portions 5592 of the pressing elements 559 and that press the semi-spherical outer portions 5591 of the pressing elements 559 and the upper ends 541' of the supporting frames 54 against the rod-supporting wall portions (553a) of the inverted U-shaped wall 553. As such, the upper ends 541' of the supporting frames 54 are positioned within the inverted U-shaped wall 553 such that the supporting frames 54 are movable forcibly within outer positions shown by solid lines in Fig. 3 and inner positions shown by phantom lines in Fig. 3.

With this invention thus explained, it is apparent that numerous modifications and variations can be made without departing from the scope and spirit of this invention. It is therefore intended that this invention be limited only  
5 as indicated by the appended claims.